XC100 SERIES MONITOR
&
XT300 SERIES
DEHYDRATOR

USER MANUAL

Bulletin AE01B-A0510-001

Rev: A
Issue Date: July 13, 2004

TABLE OF CONTENTS

SECTION 1	General Information	4
	Introducing New XC100 Monitors for use with the XT300 dehydrator	4
	Description	4
	Introducing the DryLine™ Redundant Hot Standby Setup	4
SECTION 2	Installation	5
	Unpacking and Inspection	5
	Perform Pre-System Startup Test	6
	Place the Monitor and Dehydrator	6
	Install Polyethylene Tubing Lines	6
	Connection Procedure	6
	XC100 Series System configuration diagram Basic	7
	Connect Alarm Wiring	8
	XC100 Series System configuration diagram Multi-Line	9 & 10
	Connect to Dry Air Cable System	11
	Purging Procedure	11
	Connect to Power Supply	11
	Grounding Instructions	11
	Plug and Outlet Configurations	12
	Test the Unit	12
	System Volumes, Times to Purge and Pressurize	13
SECTION 3	Controls and Displays	14
	Monitor Controls	14
	Microprocessor Control Keys	14
	Digital Display Window	14
SECTION 4	Operation	15
	Control Status and Programming	15
	Familiarize yourself with the Displays	15
	Main Menu	15
	Program Mode Submenu	15
	Pressure Monitoring and Control	18
	Monitor Duty Cycles	20
	Display of System Pressure	20
	Alarm Conditions	20
	Programming Procedure	20
	Shutdown Procedure	20
SECTION 5	Theory of Operation	21
	Dehydrator	21
	Dehydrator Control	21
	XC100 Schematic	22
	XT300 Schematic	23
	XT300 Compressor Schematic	24

TABLE OF CONTENTS

SECTION 6	Maintenance	25
	Semi-Annual Preventive Maintenance Inspection	25
	In Case of Difficulty	25
	Semi-Annual Preventive Maintenance Inspection	25
	Check Water Filter and Coalescent Filter and Elements	25
	Check Electrical Connections	25
	Check Ground Wire	25
	Check Run Time	25
	Replace Compressor Air Filter	25
	Carefully pull off the filter	25
SECTION 7	In Case of Difficulty	26 & 27
SECTION 8	Parts Replacement and Monitor Overhaul	28
	Three-Year Recommended Dehydrator Spare Parts	28
	XC100 Line Monitor Spare Parts	28
	XT300 Dehydrator Spare Parts	29
	Parts Replacement Procedures	30
	Unit Shutdown and Removal	30
	Door and Panel Removal	30
	Replace Power Switch	30
	Replace Circuit Breaker	30
	Replace Compressor Control PCB	30
	Replace Compressor	30
	Disconnect Wiring	30
	Disconnect Tubing	30
	Compressor Remount and Reassembly	31
	Replace Heat Exchanger	31
	Replace Water Filter Element - 3000 hour Maintenance	31
	Replace Coalescing Filter Element	31
	Replace Cooling Fan	31
	Replace Microprocessor Board	32
SECTION 9	Specifications	33
	Specifications for Monitors XC100 Series	33
	Specifications for Dehydrator XT300 Series	33
	Optional items	33
SECTION 10	Customer Support	34
	24 Hour Technical Service Hotlin	34
	Free Loaner Program	34
SECTION 11	Warranty	36

Section 1
General Information

1.1 Introducing New XC100 Monitors for use with the XT300 dehydrator

The Andrew XC100 Monitors are a new generation of pressurization control equipment for antenna and transmission line systems. They feature enhanced programmability and controls with a bright new display and keypad. The dehydrator features a patented membrane separation drying technology for the industry's best performance and reliability plus many exclusive new features such as microprocessor control and quiet operation.

This Manual contains the information you need to install, operate and maintain your DryLine™ dehydrator and XC100 Series monitor.

1.2 Description

The XC100 Series monitor are designed to control all functions of the DryLine™ XT300 Series dehydrators. The XC100 includes a microprocessor control circuit, along with a membrane “touch tactile” keypad and a vacuum fluorescent display. An infrared (IR) interface is now included which allows direct programming and status reviews using a PDA or laptop computer. A new event log is also recorded to assist with system status with system status and cycle analysis.

Figure 1 XT300 with XC100 on top

1.3 Introducing the DryLine™ Redundant Hot Standby Setup

The Andrew XC100 Series Monitor with XT300 dehydrator provides a new level of transmission line system protection through the Redundant Hot Standby version.

In this configuration, two XTC100 Series dehydrators are connected together, providing dry air distribution to one or more transmission lines and common control over the operation of both dehydrator. The system also provides additional capacity for very large, tight systems where the flow of a single monitor is not sufficient for purging and initial pressurization, but is adequate for maintaining pressure, once established.

Section 2
Installation

2.1 Unpack Dehydrator and Line Monitor and Inspect for Shipping Damage

Carefully remove packing material.

Check the monitor and line monitor for shipping damage such as dents or loose parts.

Open the covers and check for loose wires, hoses, or components.

If anything loose, refer to the piping schematic Figure 10 or the wiring schematic Figure 12 for proper placement.

If there is damage or if there are any other problems, contact Andrew Technical Service. Telephone numbers are listed in Customer Support Section 10.

If everything looks correct, close the covers.

2.2 Perform Pre-System Startup Test

Make sure power switch is in the OFF position. Plug the monitor and dehydrator into proper electrical outlets. Proper outlets are defined in the specifications. Connect the 5VDC control signal cable from the monitor to the dehydrator. Connect the dehydrator output air line to the monitor input. Do not connect the air lines to the transmission lines at this time. After turning the power switches ON, within 30 seconds the systems will start and the display will read: “SYSTEM PRESSURE XXX.X PSI (or KPa). As the unit warms up, check the filter bowls See Figures 1 to ensure condensate is being released and not building up in each bowl. Check the air output port at the top or back of the unit to make sure that air is flowing out. If problems exist, review troubleshooting procedures in Section 7 or consult Andrew Technical Service. If these items check out, turn power switch OFF, unplug the unit.

For the Redundant Hot Standby configuration, there is a control line from the master unit which connects to the input line on the slave unit.

Figure 2 Filters

2.4 Place the Monitor and Dehydrator

The DryLine™ XC100 Series monitor and XT300 dehydrator are designed to be rack mounted or shelf mounted.

2.5 Install Polyethylene Tubing Lines

* Monitor input line marked “INPUT” from the dehydrator.

* Monitor output line marked “OUTPUT” to the distribution panel and transmission lines.

* Configuration diagrams are shown on pages 7-10 of this manual.

2.6 Connection Procedure

Connect the Transmission Line Tubing. Insert the tubing run from the transmission lines or distribution into the fitting in the back panel of the monitor marked "OUTPUT".

Install the isolation shutoff valves. The valves when used on output lines, allow the system to retain pressure while the system is removed for servicing. Place each valve in line between each output and transmission line.

For Redundant Hot Standby, use the Tee fitting (optional) to connect the output lines together (from the master and slave units).

Figure 3 Transmission Line Connections

XC100 Series System configuration diagram Basic

This configuration shows proper hook up for systems when only a single waveguide is required in the system.

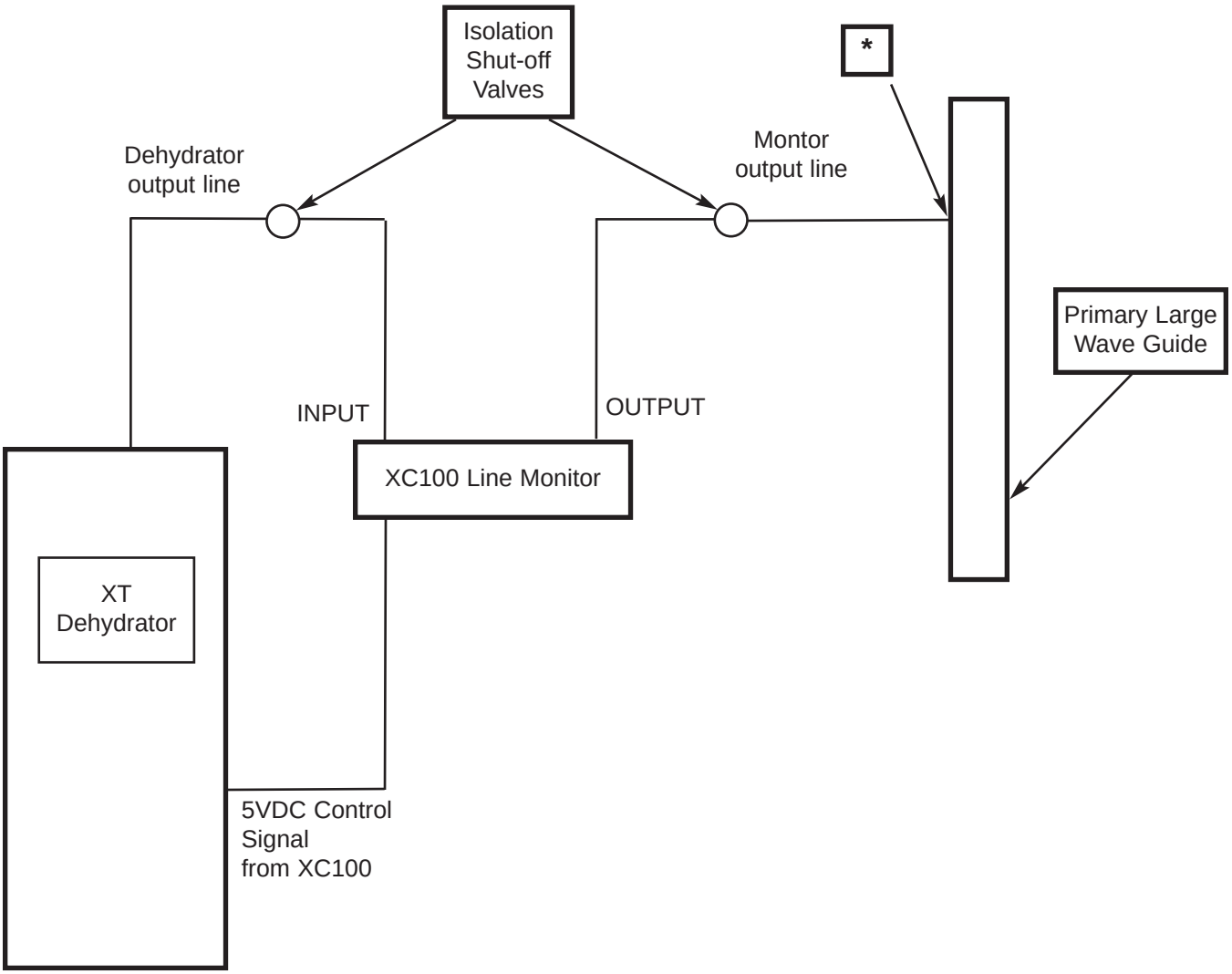


Figure 4 XC100 Series System configuration diagram

CAUTION!
Do not operate the Monitor with the system isolation valves closed or with the remote sensing line disconnected. Serious damage to the wave guide due to overpressure can occur.

*** NOTE!**
To provide extra overpressure protection, a secondary popoff valve may be added at this point that is closely matched to the maximum system safe pressure. See specification page for options available

2.7 Connect Alarm Wiring

If Normally Closed contacts are desired, move the jumper on the PC boards to the N.C. position. Jumper on positions A-B for normanlly open, position B-C for normanlly closed. All alarms are dry contacts and can be ganged together if a single alarm is desired. See figure 5.

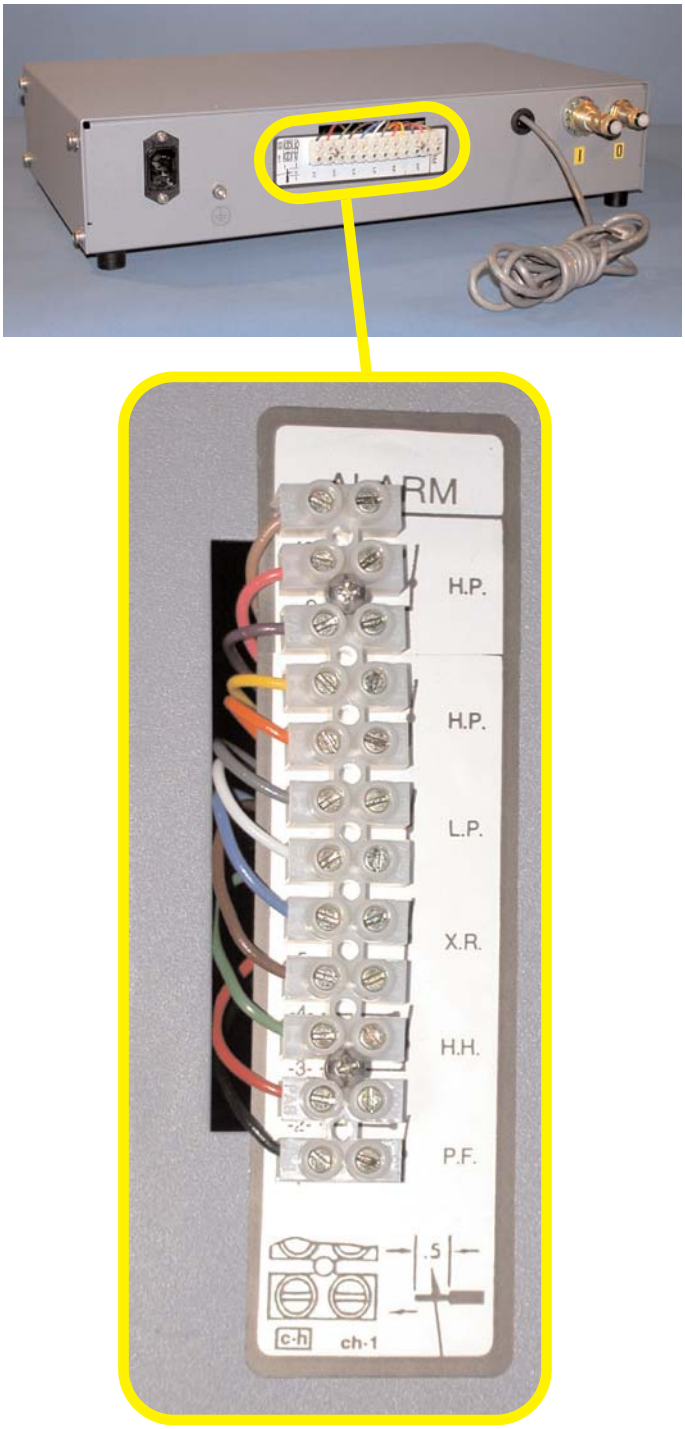


Figure 5 Alarm Jumpers

Locate the terminal strip on the back of the line monitor and connect the alarm wiring to terminals shown in figure 6.

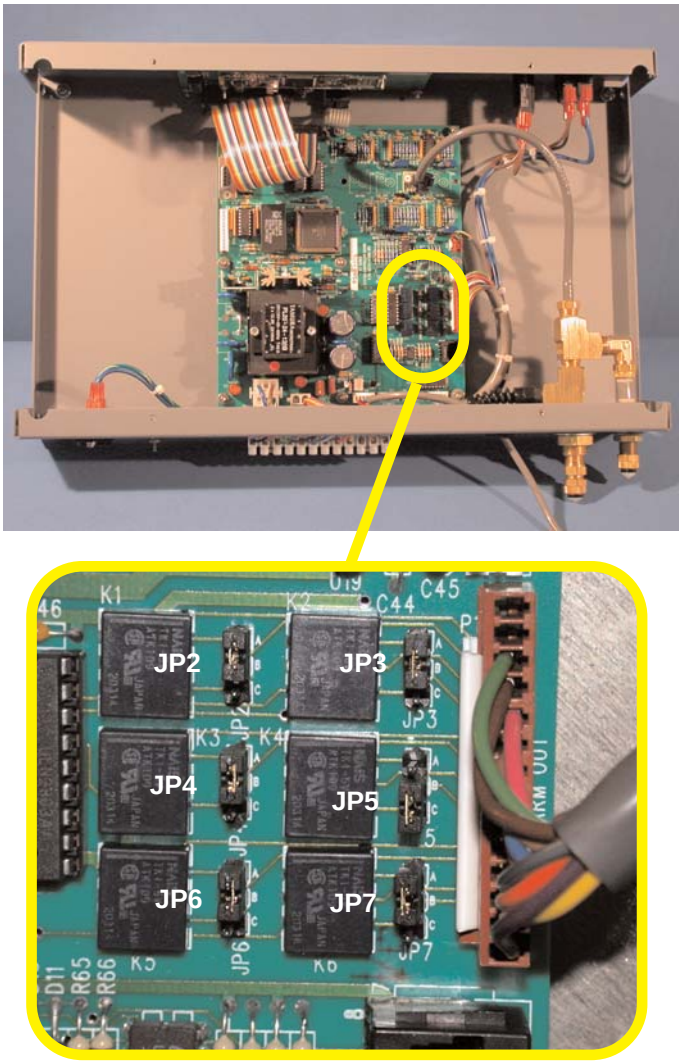


Figure 6 Terminal strip

Table 1 Terminal strip			
Function	**Terminal**	**Symbol**	**Jumper**
High Pressure	Common	-	JP7
High Pressure	Normally Open	+	
High Humidity	Common	-	JP2
High Humidity	Normally Open	+	
Excess Run	Common	-	JP4
Excess Run	Normally Open	+	
Low Pressure	Common	-	JP6
Low Pressure	Normally Open	+	
Power Fail	Common	-	JP5
Power Fail	Normally Open	+	

XC100 Series System configuration diagram Multi-Line

This configuration shows proper hook up for systems, when when more than a single wave waveguide is required in the system. For larger systems, a second LM400 monitor or additional MN6600 Distribution Maniflods can be added Figure 7. This diagram can also be used for hooking DP-4A-001 or MN6600 Series Manifold to the system.

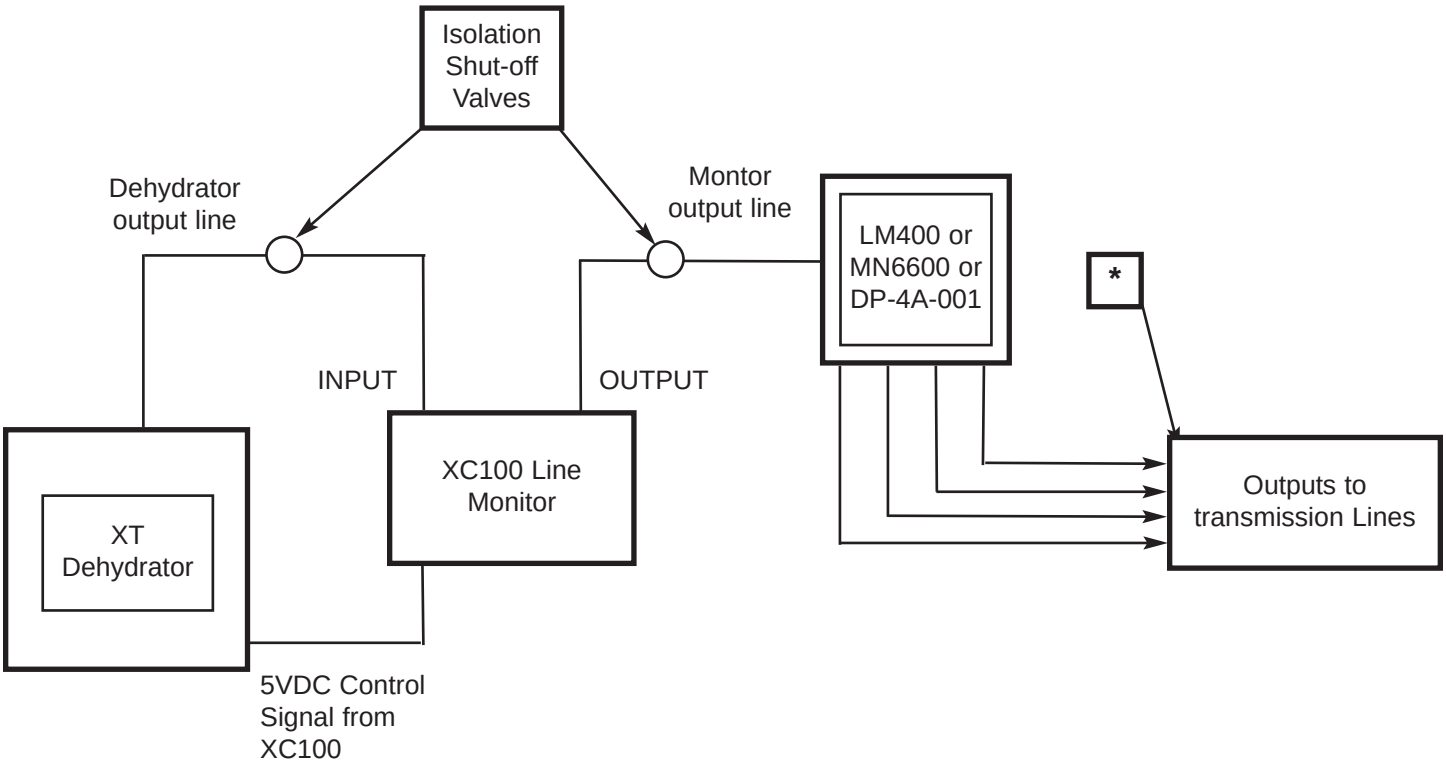


Figure 7 XC100 Series System configuration diagram Multi-Line

CAUTION!
Do not operate the Monitor with the system isolation valves closed or with the remote sensing line disconnected. Serious damage to the wave guide due to overpressure can occur.

*** Note**
To provide extra overpressure protection a secondary popoff valve may be added at this point that is closely matched to the maximum system safe pressure. See specification page for options available

This configuration shows proper hook up for a redundant system configuration Figure 8.

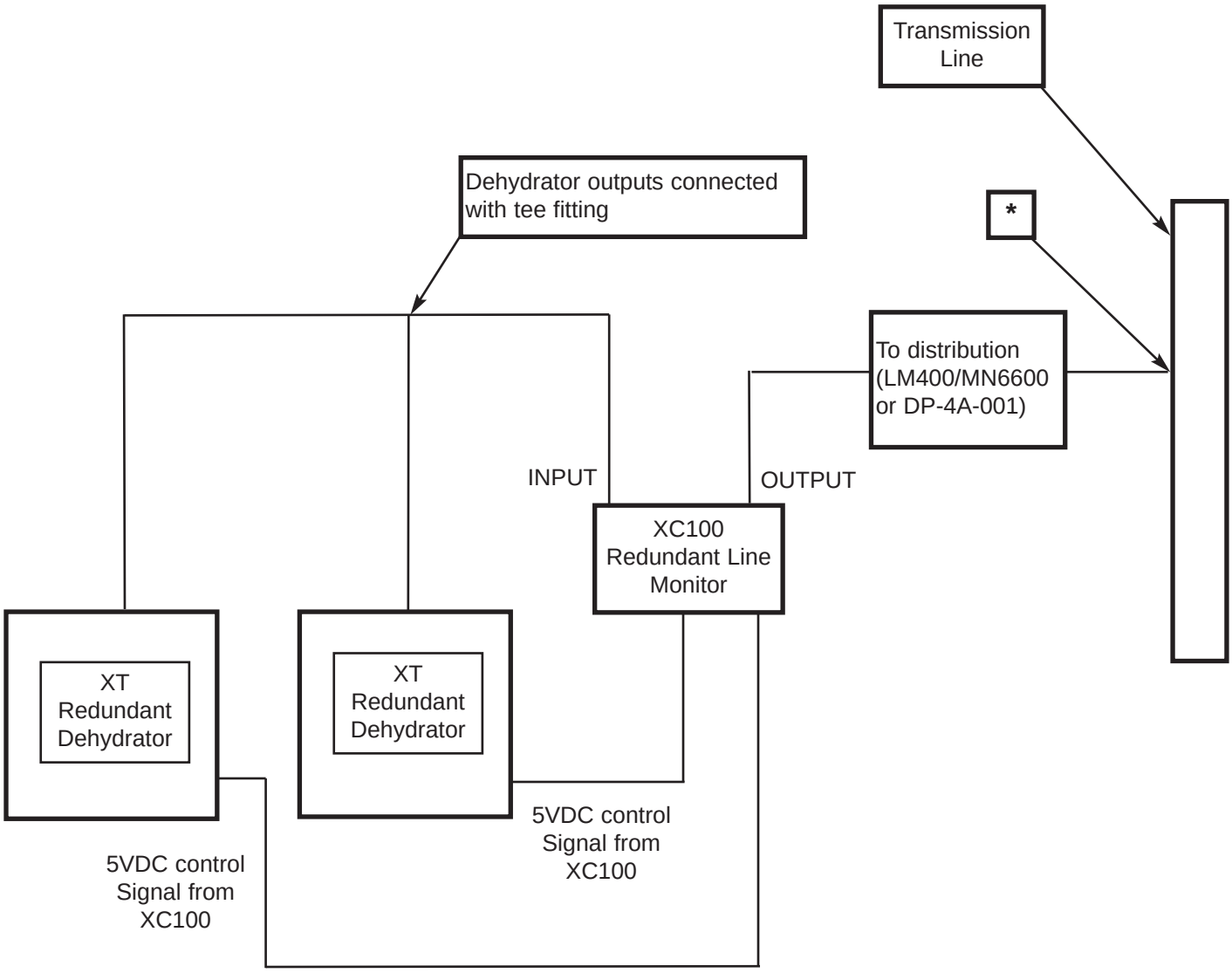


Figure 8 XC100 Series System configuration diagram Multi-Line

CAUTION!
Do not operate the Monitor with the system isolation valves closed or with the remote sensing line disconnected. Serious damage to the wave guide due to overpressure can occur.

*** Note**
To provide extra overpressure protection a secondary popoff valve may be added at this point that is closely matched to the maximum system safe pressure. See specification page for options available

2.8 Connect to Dry Air Cable System

CAUTION

Check the system pressure rating before connecting the dehydrator/monitor to the transmission line system. The pressure settings must be adjusted to match the ratings of the waveguide components. See Section 4. To insure that all internal dehydrator components are properly dried; operate the unit for at least 45 minutes prior to connecting the output air line to the primary waveguide.

If the transmission lines have not been purged, take the following steps to dry the system; otherwise, proceed to Section 3, Controls and Displays.

2.8.1 Purging Procedure

Determine total volume of the pressurized dry air cable system to be connected to the monitor. Refer to "Table 2 - Times to Purge and Times to Pressurize." Remember if the Redundant Hot Standby option is used, these times can be cut in half (approximately).

Open the opposite end of the cable system from the monitor for purging.

Operate the monitor (after the initial 45 minute drying period) to deliver dry air into the pressurized air system until a total of 3 volumes have been pumped through the entire system.

Check the humidity in the system using the humidity alarm, if so equipped. Perform this check after the far end of the system has been closed and the system has been stabilized for at least 5 hours.

Check cycle timing. Compressor on time should be no more than 10% of off time for maximum life. If not:

1. System may not be properly sized.
2. Leaks may exist. Check using Snoop or detergent water.
3. Normal connector leakage may be greater than expected.

During the OFF cycle, the dehydrator is designed to allow a small amount of system air to bleed back through the membrane dryer. This air maintains the dryness of the membrane dryer. As system air bleeds back through the dryer, additional system moisture is continually removed, lowering the system dew point even further.

Your system is now up and running at the factory programmed settings. To become familiar with the microprocessor controls and to change the settings, proceed to Section 3, Controls and Displays.

Connect the alarm wiring to the terminals on the back of the XC100. Refer to the label on the alarm board or the schematic for the proper connections.

2.9 Connect to Power Supply

The XC100 Series and XT300 Series can be plugged into a standard 15-amp power receptacle of the rated voltage.

Connect the monitor to a properly grounded power outlet. Power is specified in Section 9, Physical Specifications.

2.9.1 Grounding Instructions

This product should be grounded. In the event of an electrical short circuit, grounding reduces the risk of electric shock by providing an escape path for the electric current. This product is equipped with a cord having a grounding wire and a grounding plug. It should be plugged into a properly installed outlet that is grounded in accordance with all local codes and ordinances.

WARNINGS

Improper installation of the grounding plug can result in a risk of electric shock. If repair or replacement of the cord or plug is necessary, do not connect the green grounding wire to either flat blade terminal. Check with a qualified electrician or serviceman if you have any questions regarding grounding or if in doubt as to whether the product is properly grounded.

Connection to a Halo Grounding System: A #10 grounding stud is located at the inside power entry area of the dehydrator chassis and on the back of the monitor for direct connections to a halo grounding system. Connect using a No.6 copper stranded wire, terminated at the ground stud with a proper ring tongue crimp-on terminal.

2.9.2 Plug and Outlet Configurations

Make sure that the units are connected to an outlet having the same configuration as the plug. Do not modify the plug. If it will not fit the outlet, have a proper outlet installed by a qualified electrician. Do not use an adapter. If the product must be reconnected for use on a different type of electric circuit, qualified service personnel should make the reconnection.

2.10 Test the Unit

Turn ON the monitor and dehydrator. The display should indicate 0.0 pressure within thirty seconds. The humidity alarm, low-pressure alarm, pressure reading and, eventually, the excess run time alarm (if so equipped) should flash in sequence in the display window. The alarm conditions exist because the unit is not connected to the system.

TABLE 2 System Volumes, Times to Purge and Pressurize

Line Type	Volumes		Time to Purge 1000 ft (305 m) in Hours per 3 Volumes	Time to Pressurize to Operating Pressure In Hours Per 1000 ft (305 m2.)
	ft^3 per 1000 ft	liters per 1000m	XT300	XT300
HELIAX Coaxial Cable, Pressurized to 5 lb/in² (35 kPa)				
3"	36.7	3410	5.46	.613
4"	69.9	6494	10.4	1.173
5"	117.0	10870	17.33	1.960
HELIAX Elliptical Waveguide, Pressurized to 5 lb/in² (35 kPa)				
EW34	25.0	2323	3.70	.413
EW28	36.0	3345	5.33	1.200
EW20	60.5	5621	8.96	1.013
EW17	71.0	6596	10.52	1.187
Circular Waveguide, Pressurized to 5 lb/in² (35 kPa)				
WG269	39.5	3670	5.85	.667
WC281	43.1	3746	6.38	.720
Rigid Transmission Line, Pressurized to 5 lb/in² (35 kPa)				
3-1/8”	48.7	4524	7.21	.813
4-1/16”	84.0	7804	12.44	1.413
6-1/8”	194.0	18023	28.74	3.233
8-3/16”	347.0	32236	51.41	5.826

TABLE 3 Pressure Ratings

Antenna	Max. Pressure Rating, lb/in2 (kPa)
uMx-459	5 (35)
UMx-611	5 (35)
HPX12-6511C	5 (35)
P-186	2 (14)
2 GHz Antennas	3 (21)

CAUTION

uMx-459, -465,-611 and HPX12-6511C and P-186 Antennas have lower pressure ratings than the Antennas as indicated in the chart below.

Maximum pressure ratings for reference, contact the antenna group for actual pressure ratings. Specific feeds and pressure windows may have reduced pressure ratings.

Section 3
Controls and Displays

This section explains the functions of the controls and displays used for operation and programming of the monitor.

3.1 Monitor Controls

ON-OFF Double pole power switch controls both sides of the line. Built-in light indicates power is ON.

Circuit Breaker White tab indicates overload condition. Resettable.

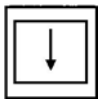
Fuse On front door.

3.2 Microprocessor Control Keys

Advances display (scrolls ahead) to the next display or program mode without changing the values in the microprocessor memory.

Enters into the microprocessor memory the values displayed in the window and advances display (scrolls ahead) to the next program or display mode.

Numerically increase displayed settings in display window. When depressed longer than 1/2 second scrolling will occur at a faster rate.



Numerically decrease displayed settings in display window. When depressed longer than 1/2 second scrolling will occur at a faster rate.

Used to allow the user quick access to the system event log. After depressing this button, the most recent event will be displayed. The upand down arrow buttons may be used to browse the log.

3.3 Digital Display Window

The window displays three types of information:

System Status Information. Displays system pressure and total run time.

Program Control Prompts. Used for setting duty cycle ON/OFF pressures and alarms.

Alarm Condition Display. A flashing display indicates that an alarm condition exists.
The display is factory set for English language and English units. It can also be set for metric units.

Section 4
Operation

4.1 Control Status and Programming

XC100 Series monitors have a microprocessor based control board for monitoring and control of the monitor and setting the programmable alarms. It comes factory set for English language and English units.

Figure 9 shows the various modes, which may be viewed, in the display window. Main Menu displays are shown in the first column. Program Mode Submenu displays are shown in the second column.

4.2 Familiarize yourself with the Displays

4.2.1 The Main Menu

First, become familiar with the Main Menu. Turn the monitor. In about 30 seconds, the monitor will start and begin to pressurize the system. Upon power up the system will do a set of internal diagnostics and mean while display as follows: “X controller revision XX.X.” If a power-up test failure is detected the following is displayed: “system pressure XXX.X PSI (kPa).

1. Press the SELECT button and the display will indicate "PROGRAM MODE".

2. Press the SELECT button again and the Total Run Time will appear as "XXXX.X HOURS" and indicate total hours since initial turn-ON.

Note
for the Redundant Hot Standby

version, the SELECT button can be pressed again and total run time will appear as; "XXXX.X hours B" and indicate total Dehydration B hours since initial turn ON.

3. Press SELECT and you will return to system pressure, or, if the excess run alarm has been purchased, "CLEAR RUN TIME" will appear. This feature is used to clear the alarm by pressing the ENTER key and proceeding back to [COMP 5.0 PSI].

4.2.2 The Program Mode Submenu

If your monitor is equipped with all options, all of the screens shown in the flow chart will apply. The modes pertaining to high-pressure, high humidity (fixed at 7.5% R.H.) and excess run time, as well as multi-channel manifold capability are options.

1. Press the SELECT key and proceed from system pressure to [PROGRAM MODE].

2. Press the ENTER key and proceed to the Program Mode Submenu. [COMP ON 0.5] will now appear on the display. At this point, the display will be as follows, prompting the user for a new password: “password 0/1 2/3 4/5 6/7 8/9 the default password is “111111”. The following are used for password entry:

Select	0/1
Up Arrow W	2/3
Down Arrow	4/5
Enter	6/7
View Log	8/9

The following sections describe the various programmable functions and the associated sub-functions in detail.

3. Compressor Count
This valve is set to “1” for a single compressor up to “4” when used with multiple compressors in the Redundant Hot Standby mode. Values = “1-4”.

4. High Pressure Tank
Set this valve to “NO” unless the high pressure tank option was purchased. Values = “Y or N”.

5. SET DATE (month)
2 digits for month of the year.
values = “01 - 12”

6. SET DATE (day)
2 digits for day of the month.
values = “01 - 31”

7. SET DATE (year)
2 digits for year.
values = “00 - 99”

8. SET TIME (hour)
2 digits for hour of the day.
values = “00 - 23”

9. SET TIME (minutes)
2 digits for minutes of the hour.
values = “00 - 59”

10. COMP RUN TIME ALARM
Set this to a time above the normal runtime on the system.
values = “5 - 240”

11. COMPRESSOR ON
Set this the desired start pressure in PSI (or kPa) format is XXX.X PSI. Values = “0.3 - 15.0” for standard unit or “0.3 - 100.0” for the high pressure option.

12. COMPRESSOR OFF
Set this the desired start pressure in PSI (or kPa) format is XXX.X PSI. Values = “0.3 - 15.0” for standard unit or “0.3 - 100.0” for the high pressure option.

13. LOW PRESSURE ALARM
Set this the desired low pressure alarm threshold. Format is XX.X PSI (kPa). Values = “0.1 - 15.0”.

NOTE
Must be set below compressor ON set point. Recommended setting is at least 0.3 PSI below compressor ON values.

14. HIGH PRESSURE ALARM
Set this to the desired high pressure alarm threshold. Format is XX.X PSI (kPa). Values = 0.1 - 16.0”

NOTE
Must be set above compressor OFF set point. Recommended at least 0.3 PSI above OFF value.

15. BACKUP COMP ON PRESS
Used only with multiple compressor systems set to operate in redundant hot standby mode. This is set to the desired start pressure for the backup compressor(s). Format is XXX.X PSI (kPa). Values = “0.3 - 15.0”.

NOTE
Must be set below primary compressor ON set point.

16. COMP OVERHAUL TIME
Factory only setting 3000 hours.

17. KEYPAD INACTIVITY
Format is XX seconds. Factory set for 45 seconds.

18. SYSTEM PRESSURE HI RES
If set to “YES”, this setting will display system pressure two decimal places of resolution. Set to “NO” except when system pressures are very low or the ON and OFF pressure differential is very small.

19. ENTER NEW PASSWORD
The factory set password is “111111”. User many enter a new password and depress “ENTER” or depress the “SELECT” button to cancel the change.

Notes

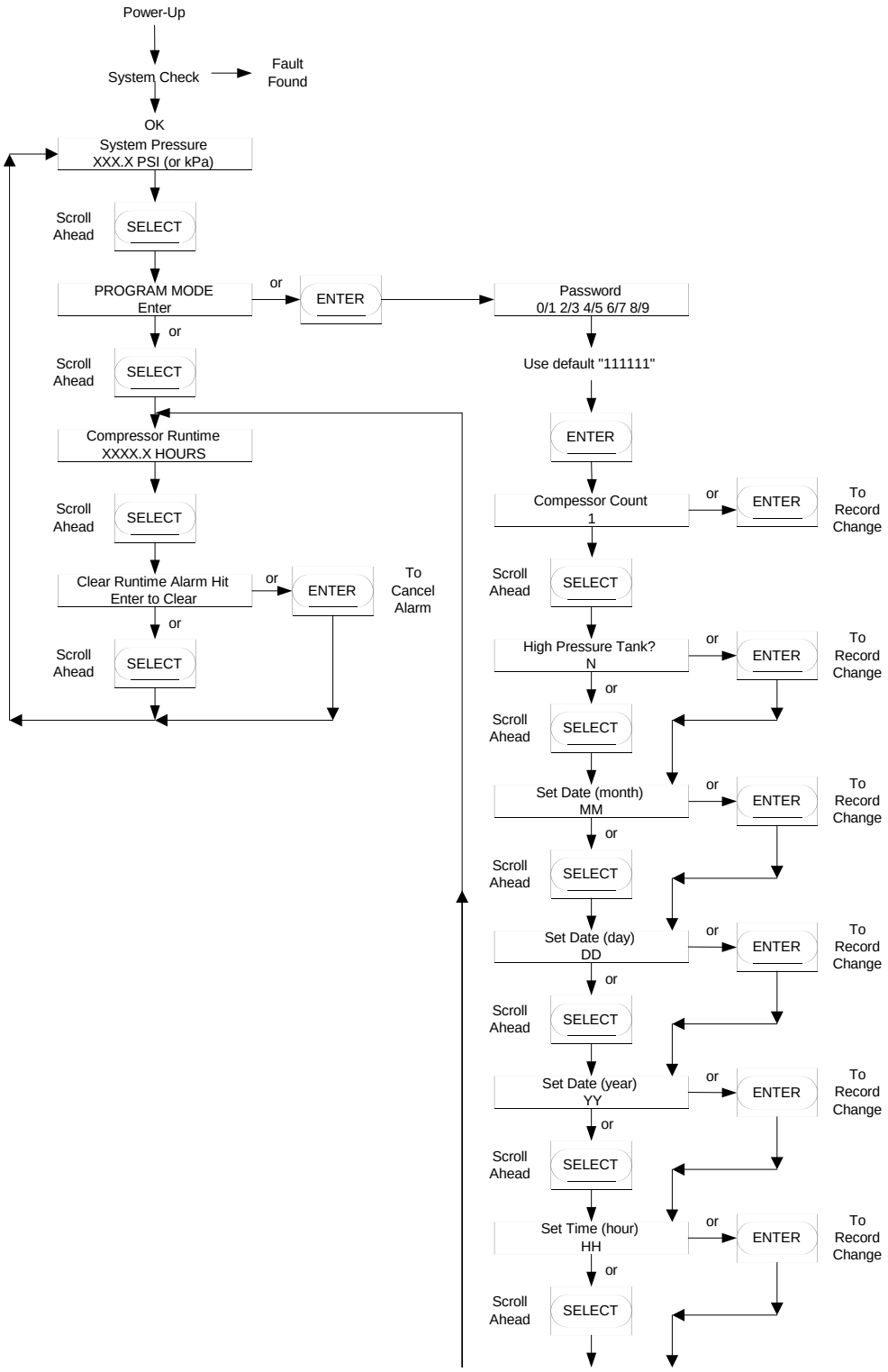


Figure 9 Program Mode Submenu

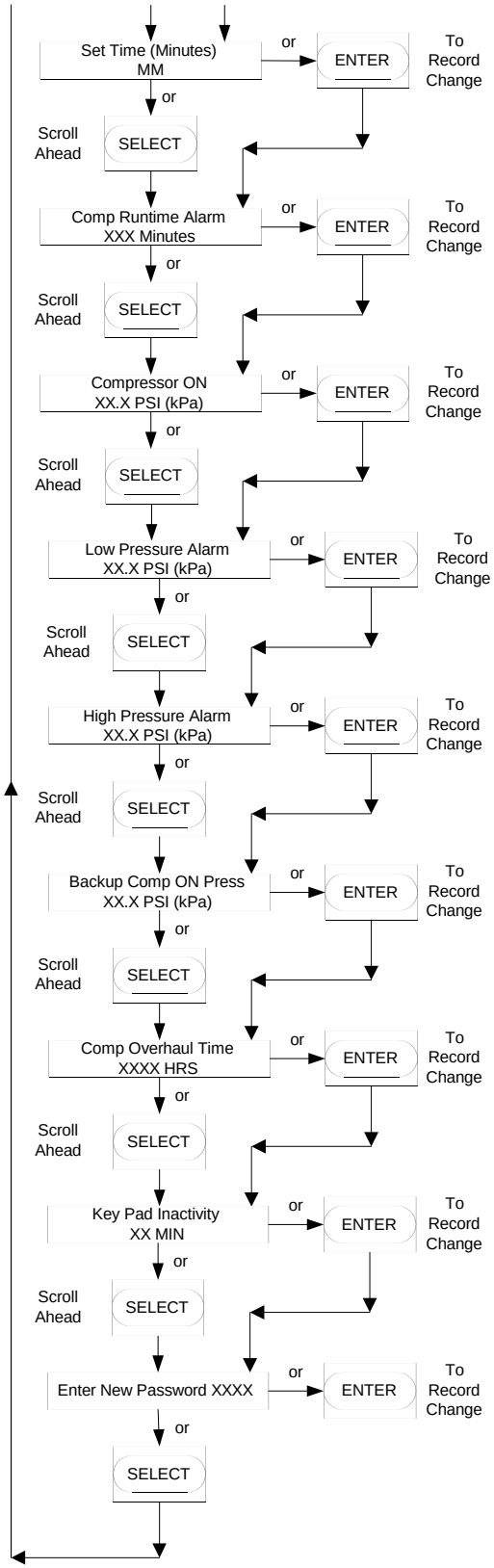


Figure 10 Figure 9 Program Mode Submenu Continued

4.3 Pressure Monitoring and Control

4.3.1 Monitor Duty Cycles

The monitor is programmed at the factory to start when the output pressure of the dehydrator drops to .5 lb/in^2 (3 kPa) and stop when the pressure reaches 5 lb/in^2 (35 kPa). That is the recommended pressure range for most antenna and transmission line components, which have a rating of at least 5 lb/in^2 (35 kPa).

Some system components, however, have lower pressure ratings. Using the procedures described below, XC100 Series monitors can be programmed for any start/stop pressure combination in the 0.3 - 15.0 lb/in^2 (2-103 kPa) range.

For the Redundant Hot Standby version, the master unit is programmed to operate at 1.0 PSI (7 kPa) and the slave unit is programmed to start at 0.5 PSI (3.5 kPa). Both units are set to stop at 5.0 PSI (35 kPa).

4.3.2 Display of System Pressure

The monitor output pressure SYSTEM PRESSURE 0.0 PSI is the initial display as power is applied to the unit.

As shown in Figure 9, Main Menu, pressing the

Key will display "PROGRAM MODE" on the display window.

4.3.3 Alarm Conditions

Alarm conditions, except high humidity, are defined by the programmed settings entered into the microprocessor as described below. Alarm contacts are included in the unit and wiring terminals are located on the back of the monitor. When an alarm condition exists, the normally open contacts are closed, thereby activating a remote alarm (not included). Also, the alarm condition will flash continually on the display window until the alarm condition is corrected. In the case of the excess run alarm, the alarm must be cleared as described in the programming section.

4.4 Programming Procedure

Use the **SELECT** key to advance through the series of prompts without changing the programmed values. If you change a value and want to save it to memory, use the **ENTER** key, which will also advance you to the next feature.

With the "PROGRAM MODE" prompt displayed in the display window, press the

key to precced to the first programmable feature.

4.5 Shutdown Procedure

When removing your monitor or dehydrator from service, you may need a substitute dry air source. Call Andrew Technical Service. Telephone numbers are listed in Customer Support section 10.

Before turning OFF the unit, notify personnel that alarms may be activated.

To shut down the XC100 Series unit first turn the dehydrator power switch to the off position, turn the monitor ON-OFF power switch to the OFF position and close the isolation shutoff valves located in the output/input lines to retain system pressure.

Disconnect by unscrewing the poly tube compression fittings located at the back or top of the units.

Section 5
Theory of Operation

5.1 Dehydrator

The patented drying system begins at the compressor, where filtered ambient air (refer to piping schematic Figures 4, 7 and 8) is compressed. The compressed air is then cooled and condensed in the heat exchanger after which water droplets are separated in the water filter. The saturated air then passes through a coalescing filter for the removal of additional water and then into the patented membrane cartridge where the remaining water is removed by pressure differential.

The water separated in the filters is blown to a pan on the head of the compressor and is evaporated by the heat of compression. The flow of the water is controlled by a timer controlled solenoid.

The membrane tube separates moisture from air by a pressure differential across semipermeable fibers. The water vapor and a small amount of the air permeate through the filter walls leaving the exiting air with a reduced water vapor content of -45°C (-50°F) dewpoint. The air that permeates through the fibers purges the water vapor out of the tube's vent ports.

This patented drying process contains no moving parts, thus reducing maintenance and increasing reliability.

5.2 Dehydrator Control

The ultra-dry air exits the dehydrator at the top (or back) of the unit. Low pressure, High pressure, High Humidity, and excess run alarms are tapped into the air line within the dehydrator.

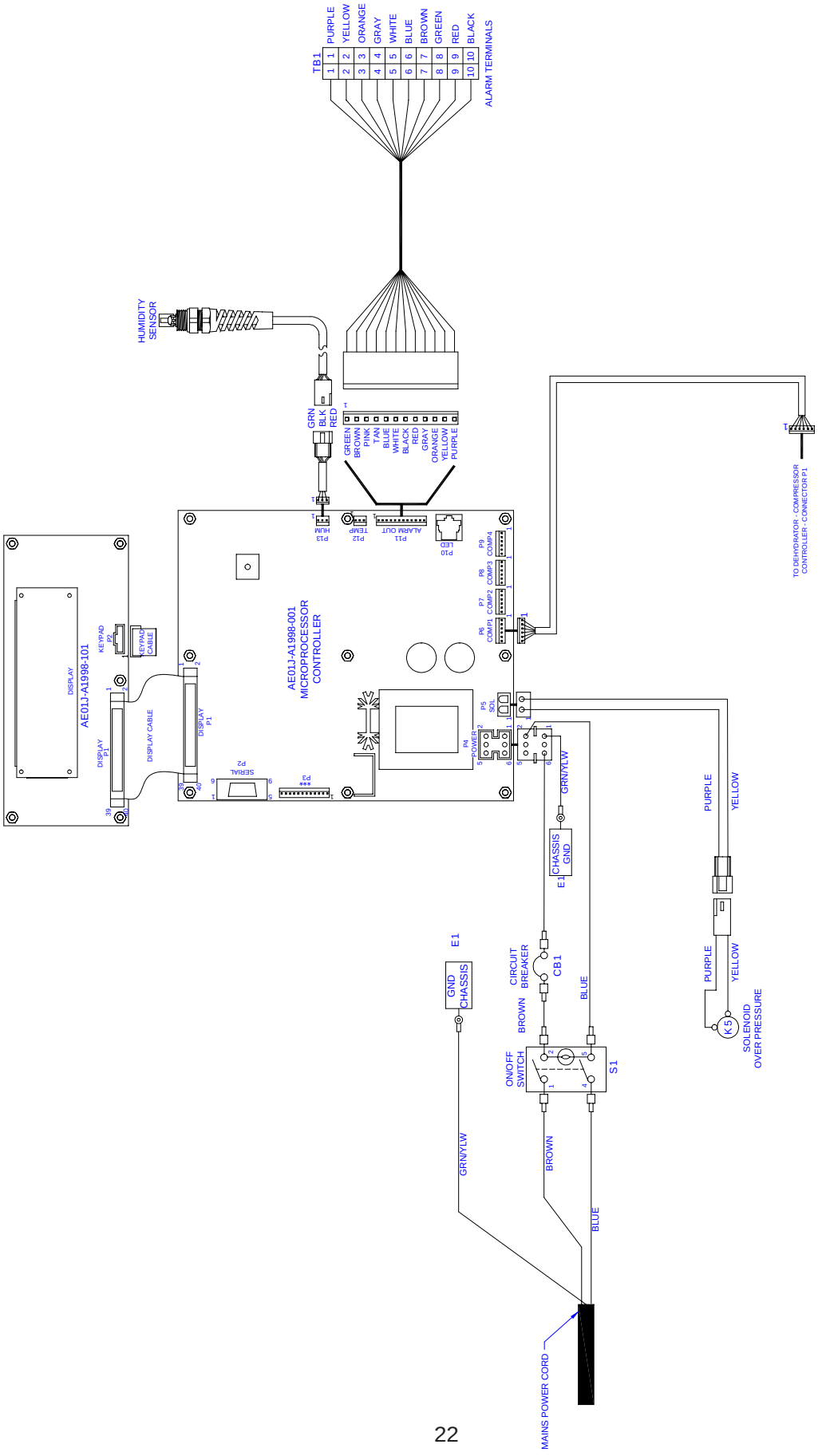


Figure 10 XC100 Schematic

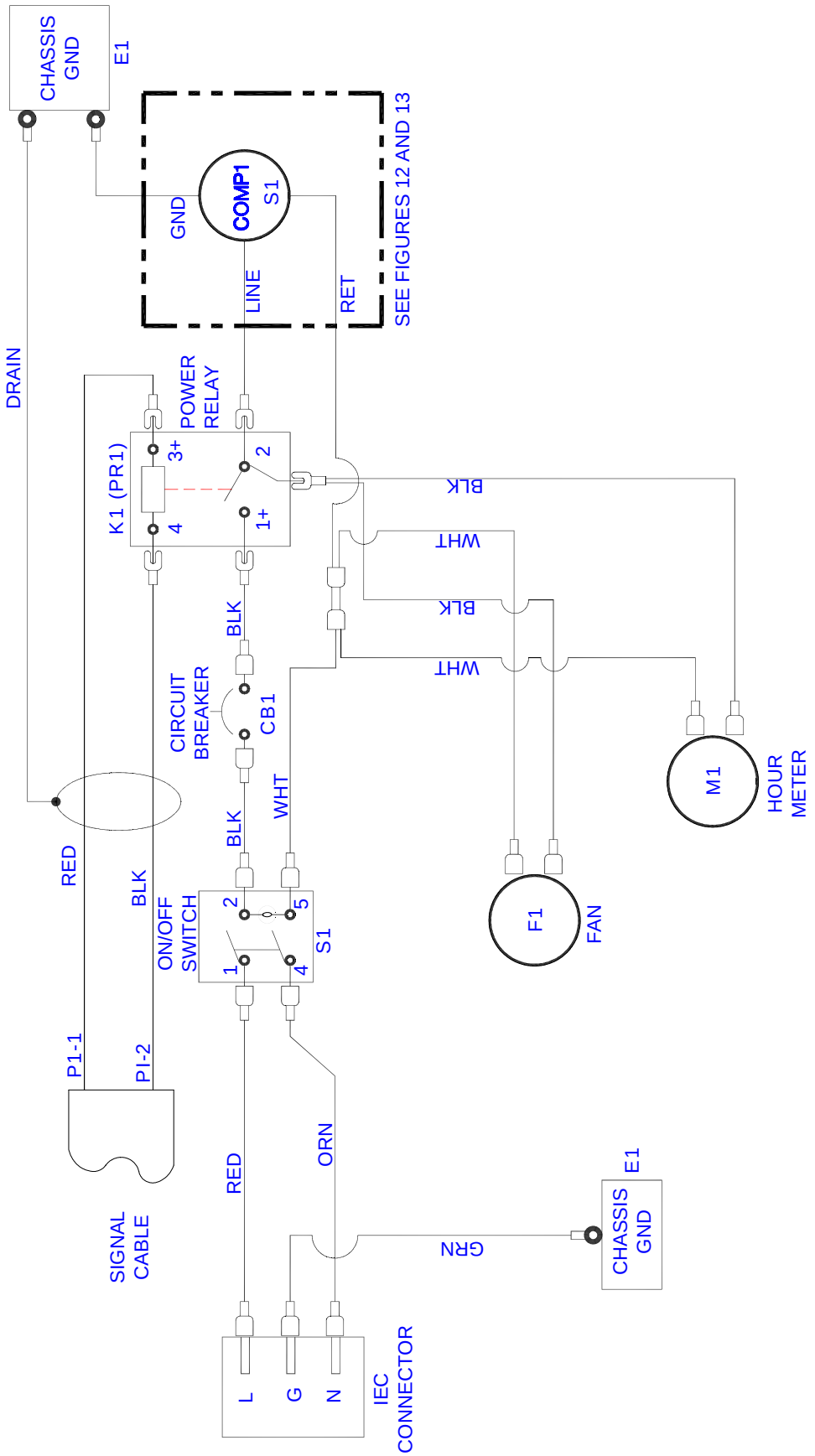


Figure 11 XT300 Schematic

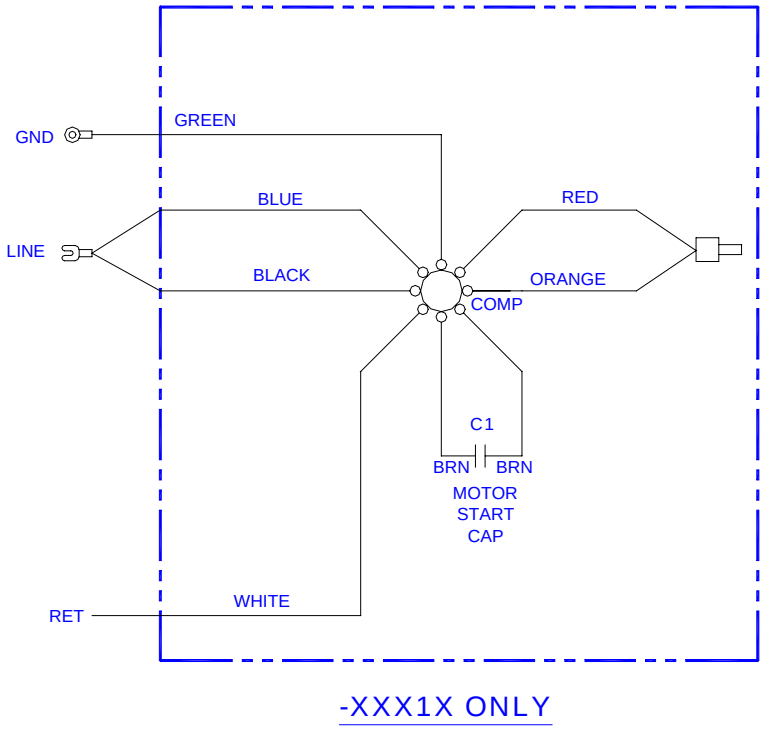


Figure 12 XT300 Compressor Schematic for 115 VAC

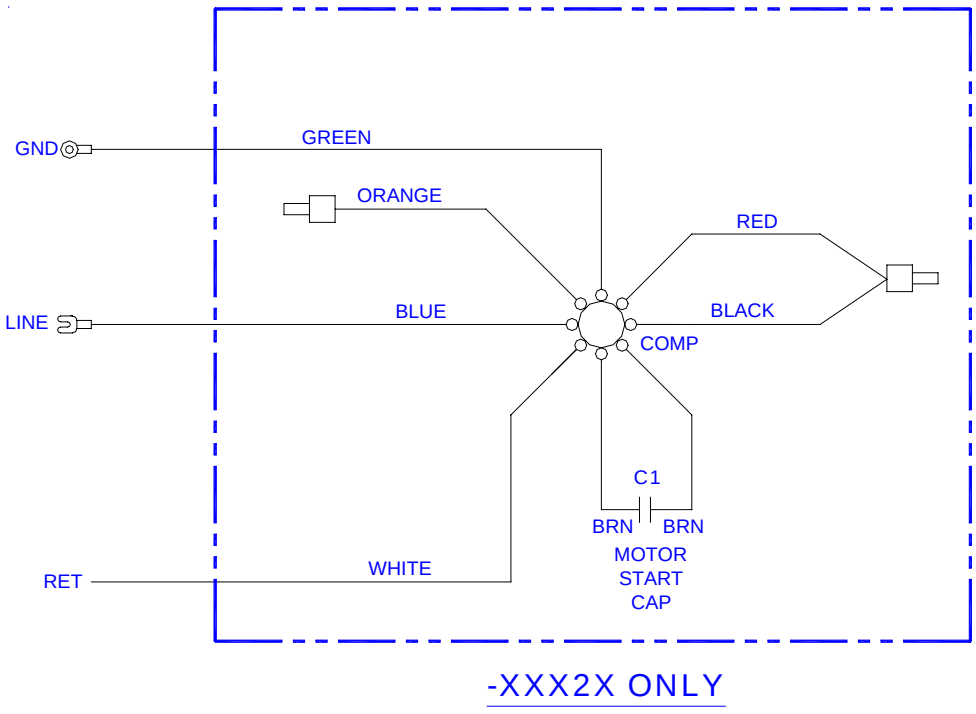


Figure 13 XT300 Compressor Schematic for 230 VAC

Section 6
Maintenance

6.0 The dehydrator requires maintenance semiannually and/or after each 3000 hours of operation to ensure continued reliable operation.

WARNINGS

Service personnel should observe all safety regulations. Do not perform maintenance on equipment without first turning OFF the main power supply. Under certain conditions, dangerous potentials may exist when the main power supply controls are in the off position. Only qualified technicians should attempt to effect maintenance or repairs on electrical equipment.

6.1 Semi-Annual Maintenance. The semi-annual maintenance consists of a preventive maintenance inspection and replacement of the compressor air filter. These tasks can be performed easily in the field as described below.

3000 hour Overhaul. A monitor overhaul is required after the compressor has run a total of 3000 hours, as indicated on the compressor run time meter. The monitor overhaul includes a compressor overhaul, water filter, high tempera ture tubing and hose clamps.

The monitor overhaul kit, see Section 8.1, includes all the necessary parts and instructions. Or, if you prefer, Andrew offers a monitor overhaul service. Contact Andrew Technical Service. Telephone numbers are listed on Section 10.

Refer to Sections 8.4.7 and 8.4.10 for procedures to replace water filter elements.

6.2 In Case of Difficulty. If the monitor will not operate or if there are other problems, refer to the troubleshooting procedures in Section 7.

6.3 Semi-Annual Preventive Maintenance Inspection

Inspection includes checking for loose or damaged hoses, fittings and electrical connections. Check the following items:

6.3.1 Check Water Filter and Coalescent Filter and Elements

Verify there is no excessive water build-up in the filter bowls. If there is excessive water, refer to the troubleshooting procedures in Section 7 for corrective action. Replacement of the water filter and coalescent filter and their associated elements and bowls is covered in the parts replacement section of this manual. Refer to Section 8.

6.3.2 Check Electrical Connections

Check for loose or corroded electrical connections. A loose terminal can cause erratic operation and unnecessary downtime. Check the screw-on and push-on terminals and tighten as required.

6.3.3 Check Ground Wire

Check for proper ground wire connection to protect operations personnel. A green ground wire is attached between the power terminal strip and the monitor chassis. The ground lug screw or stud nut must be tight to provide a proper ground.

6.3.4 Check Run Time

Check the run time on the monitor to determine the duty cycle of the dehydrator. If the monitor has been running more than 10% of the time, check for system leaks. Also check to see if it is time to schedule the 3000-hour maintenance.

6.3.5 Replace Compressor Air Filter

The air filter protects the compressor from contamination and extends the service life of the compressor. It is made of open cell material and should be replaced every six months or more often if the unit is located in a dusty environment.

Carefully pull off the filter cover and remove the filter element. Install the new filter element and replace the filter cover, being certain that it is completely seated. To replace the filter housing, unscrew the housing from the compressor head and replace with new filter housing.

Section 7
In Case of Difficulty

If you experience difficulty with your monitor or dedydrator, use the troubleshooting procedures described below. Perform the tests, inspections and corrective actions corresponding to the problem in the order listed. See pages 7-10 for piping connections and Figure 10 for wiring. Section 8 lists replaceable parts.

Andrew Technical Service. If you cannot correct the problem or if there are other difficulties, contact the Andrew Technical Service nearest you. Telephone numbers are listed on page 34.

NOTE:
Run the dehydrator to dry it out prior to connecting it to the system. Run it until the high humidity alarm clears (if so equipped). The drying process should take about 45 minutes, if the membrane dryer was not saturated. If the membrane dryer was saturated, drying may take up to 48 hours.

WARNING:
High voltage exists inside the units. Disconnect the units whenever performing troubleshooting operations.

Table 4 Troubleshooting Procedure

Problem/Condition	Solution
Monitor or dehydrator ON/OFF switch does not light, unit does not run.	Check the breaker adjacent to the ON/OFF switch if, tripped (white indicator exposed) then reset breaker by depressing.
	If ON/OFF switch light still fails to light, make sure that unit is plugged in and the power outlet is operating.
	If you still have no light, unplug unit, open the front door panel and check for loose connections. Refer to wiring diagram for proper wire connection.
ON/OFF switch does not light, unit runs.	Disconnect ac power, open front doors, check for loose connections (refer to the wiring diagram for proper connections). Replace cover and reconnect ac power.
	Replace ON/OFF switch if condition persists.
Monitor ON/OFF switch does not light and the display is blank.	Check ac voltage connection to the unit.
	Check circuit and breaker, push to reset.
	If problem persists, disconnect monitor from ac power, open front door panel and check for loose connections (refer to the wiring diagram). Close front door, reconnect power and turn ON unit. if problem is not corrected, contact Andrew Technical Service for assistance.
	NOTE: **This problem can be caused by a lightning induced power surge. The monitor is equipped with surge protectors which may cause the fuse to blow when a surge is encountered.**
On/OFF switch lights display is blank.	Check circuit breaker push to reset
	Disconnect unit from ac power, open front door panel and check for loose connections (refer to wiring diagram).
	WARNING: High voltage is present inside the enclosure and on the power supply board at this point. Failure to comply may result in INJURY or DEATH.
Dehydrator starts and stops before reaching sufficient line pressure.	Check compressor ON and compressor off settings on line monitor
	Check for kinks in line tubing. Replace tubing where necessary.

Low pressure alarm on display.	Verify that the Low Pressure Alarm Set Point is below the compressor ON set point. Isolate the low pressure condition by checking all fittings with soapy water. Make sure that all system tubing is properly seated in the fittings. Check for loose interface points and holes in the transmission lines. Correct any conditions that exist where pressure is leaking. If the condition persists, call Andrew Technical Service for assistance.
High Pressure alarm on display.	Verify the compressor turn OFF and high pressure alarm settings as shown in Sections 4.2.2. The High Presssure Alarm set point must be above the the compressor OFF set point
	The High Pressure Alarm can be triggered by ambient temperature rises. If this is a reoccurring problem, the set points should be adjusted to increase the differential between compressor OFF and High Pressure Alarm values. Contact Andrew Technical Service for further assistance.
Humidity alarm on display. CAUTION: The humidity sensor is light sensitive. DO NOT remove it from the brass fitting when the monitor is powered up.	Check the dehydrator for build-up of water in the filter bowls.
	If there is a build-up of water in the water filter bowl, use a soapy water solution to check for leaky fittings in the dehydrator. If no leak can be found, the problem is probably with the compressor. Rebuild kits for each monitor are specified in Section 8. The unit may also be returned to Andrew for repair. Contact Andrew Technical Service for further assistance.
	Note: **Once the problem has been corrected, run the dehydrator off line until the humidity alarm clears. If the membrane dryer has been saturated, this process can take up to 48 hours of continuous running.**
Excess run time alarm on display.	Check the programming of the excess run time display as shown in section 4.2.2. The set point should be at least 50% above the normal run time.
	The unit is cycling ON and off at less than a 30 minute interval. See troubleshooting section "Dehydrator starts and stops before reaching sufficient line pressure".
	Check system for leaks. See troubleshooting section "Low pressure alarm on display".
Unit turns on for only a few seconds, and then shuts OFF.	Check the ac voltage supply to the unit

Section 8
Parts Replacement and Overhaul

Andrew dehydrators have been designed to provide many years of trouble-free service and will require minimal maintenance. The display panel on the monitor contains, as one of the standard features, a reading of actual compressor run hours.

NOTICE:
To provide continuous reliable operation the dehydrator must be overhauled every 3000 hours of compressor operation. The monitor overhaul kit, listed below, contains all necessary parts. Alternatively, you may send your dehydrator to Andrew for overhaul.

Table 5 Three-Year Recommended Dehydrator Spare Parts

Item		QTY.	Part Number
1	Compressor Air Intake Filters (bag of six)	1	EFLTR-91101
2	Compressor Air Intake Filters (complete assembly housing w/filter)	1	EFLTR-20201
3	Dehydrator Overhaul Kit. Includes compressor overhaul kit, high temperature hose clamps **XT300**	1	AE01K-C0398-001

Table 6 XC100 Line Monitor Spare Parts

Item		QTY.	Part Number
1	Power Switch 115V	1	AE01J-A0129-005
2	Power Switch 230V	1	AE01J-A0129-006
3	Circuit Breaker 3 amp	1	EBREK-10376
4	Microprocessor Controller PBC 115V	1	AE01J-A2007-002
5	Microprocessor Controller PBC 230V	1	AE01J-A2007-001
6	Display PBC	1	AE01J-A2007-101
7	Keypad	1	AE01D-D1673-001
8	Humidity Sensor Cable Assy	1	AE01C-D0785-036
9	Monitor/Dehydrator Signal Cable	1	AE01C-D0796-001

Table 7 XT300 Dehydrator Spare Parts			
Item		QTY.	Part Number
1	Power Switch 115V	1	AE01J-A0129-005
2	Power Switch 230V	1	AE01J-A0129-006
3	Circuit Breaker 15 amp	1	EBREK-11576
4	Compressor 115/230V 50/60 Hz	1	AE01J-A1956-001
5	Heat Exchanger	1	EHTEX-41100
6	High Temperature Hose(compressor to heat exchanger)	5.0” (12.7cm)	EHOSE-21002
7	Low Temperature Hose (heat exchanger to water filter)	12.5”(31.75cm)	EHOSE-33002
8	Hose clamps (high and low temp hose)	4	ECLMP-20090
9	Water Filter (complete assembly)	1	EFLTA-52100
10	Water Filter Element	1	EFLTA-91010
11	Coalescing Filter Element	1	EFTA-13100
12	Coalescing Filter (complete assembly)	1	EFLTA-12203
13	Poly tubing, 1/4" OD (water drain) All units	14.0” (35.56cm)	25436-4
14	Evaporator Pan Tube Fitting	1	EFTGS-30223
15	Cooling Fan 230V	1	AE01J-A0933-010
16	Cooling Fan 115V	1	AE01J-A0933-001
17	3/8" OD Black Tubing	5ft (1.524M)	25435-5
18	Pop-Off Valve 16 PSI	1	AE01J-A0174-008
19	Back Pressure Regulator	1	EVLVR-11000
20	Evaporator Pan	1	AE01A-C0894
21	Cable Tie (for membrane)	2	AE01J-A0934-001
22	Hour Meter 115V	1	AE01J-A0481-001
23	Hour Meter 115V	1	AE01J-A0481-002
24	Evaporator Pan Spring	2	ESPRE-35564

8.1 Parts Replacement Procedures

WARNING
Disconnect electrical power from the unit before removing the doors and replacing. Failure to comply may result in INJURY or DEATH.

When the monitor run time reaches 3000 hours, it will be necessary to rebuild the compressor and replace the hoses, clamps, water and coalescent filter elements. The necessary parts and instructions are included in the over haul kit, listed in Section 8.0.

Following are procedures for replacement of the parts listed in Section 8.

8.2 Unit Shutdown and Removal

In order to perform parts replacement on the XT DryLine™ Monitors, it will be necessary to turn off the unit and remove them from service. As this is done, one or more of the alarms may be activated. Personnel who may be monitoring these alarms should be informed prior to the units being turned OFF. It will also be necessary to close off the transmission lines connected to the monitor to avoid losing pressure in these lines. Once these steps have been taken, turn OFF the power to both units, disconnect the alarm connections and unplug the unit. The units can now be moved to a suitable work table for parts replacement.

8.3 Door and Panel Removal

Carefully loosen the screws in the front doors and swing them open.

Loosen the screws in the side panels and remove the side panels by lifting them away from the unit.

8.4 Replace Power Switch

Disconnect the four quick disconnect connectors from the power switch, carefully noting the location of each wire. Compress the retainers on the switch and push the switch out the front of the chassis. It may be necessary to rock the switch from top to bottom to remove it. Replace switch, by snapping it in place. Reconnect the four wires.

8.5 Replace Circuit Breaker

The circuit breaker is located on the upper front door of the monitor. Disconnect the two quick disconnect connectors from the circuit breaker, carefully noting the location of each wire.

To remove the circuit breaker, compress the retainers on both sides and push it through the front panel opening. Replace circuit breaker, snapping it in place. Reconnect the two wires.

8.6 Replace Compressor Control PCB

The compressor control PCB controls the compressor ON/OFF cycles, solenoid drain valve timing and monitors the compressor current sensing. To remove the control PCB, open the front door of the unit. Disconnect the cable connectors from the three locations on the PCB. Remove the hardware which screw the control PCB to the door. Install the replacment control PCB by reversing the above process.

8.7 Replace Compressor

8.71 Disconnect Wiring

With the side doors removed, remove the cover plate on the compressor covering the electrical connections. Remove the ground screw and remove the green wire from the connection box. Using wire cutters, cut the white and black leads as close to the butt splice as possible. Trim 3/8 inch (10 mm) of insulation from the wire(s) and install the replacement butt splice on these two wires, leaving the compressor end of the splice uncrimped. This will be used later to connect to the replacement compressor. The compressor should now be free of any electrical connection to the unit.

8.7.2 Disconnect Tubing

Remove the milky white hose which runs from the compressor outlet to the heat exchanger inlet. Again it may be necessary to cut the clamp and hose to remove it from the heat exchanger. Using the old tubing as a template, cut the replacement tubing to length using a sharp knife. Remove the drip pan assembly from the head of the old compressor and remount it to the replacement compressor. The compressor assembly should now be free of all tubing connections.

8.7.3 Compressor Remount and Reassembly

Remove the bolts [(6) XT4500, (4) XT1000 & XT2000] which secure the compressor to the back mounting plate. Carefully remove the compressor assembly from the chassis.

Mount the compressor assembly to the back mounting plate using the existing hardware. Do not overtighten the mounting screws.

Reconnect the hoses clamps, (as supplied with the compressor replacement kit.) and wiring.

8.8 Replace Heat Exchanger

The heat exchanger is located at right side of the unit under the side panel. Under normal conditions the heat exchanger should not need to be replaced.

Replace it if the monitor has been dropped or otherwise damaged such that the heat exchanger is leaking air.

8.9 Replace Water Filter Element - 3000 hour Maintenance

Replace the water filter after each 3000 hours of operation.

When ambient room air is compressed in the monitor compressor, liquid water is formed. This liquid water must be removed in order to allow the membrane dryer to function at its peak efficiency. As the air exits the compressor, it is cooled in the heat exchanger and then enters into the water filter. The air swirls around the inside of the filter bowl, separating the liquid water out on the sides of the filter bowl. A 5 micron filter is also provided in the water filter to prevent water droplets from exiting the filter. This 5 micron filter also filters out any dust particles or other contaminants which would lessen the efficiency of the membrane dryer.

To replace the filter element, twist and remove the filter bowl from the cast housing. Unscrew the filter element from the cast filter housing and replace with a new filter. Do not attempt to clean the filter element. If it is necessary to clean the filter bowl, use a mild soap and water solution and rinse with water. Do not use solvents. Reassemble the unit by reversing the above procedure. Check for leaks by turning the unit ON and applying a dilute detergent and water solution at the bowl/housing seal and at the hose fittings which were reconnected. If no leaks are found, the unit is ready to return to service. If leaks are located, repair the leak and recheck for additional leaks. Leaking fittings must be repaired or the unit will not function properly and can result in damage to the transmission line system.

8.10 Replace Coalescing Filter Element

The coalescing filter is located downstream from the water filter. Its function is to remove any "water fog" which may still be present in the air leaving the water filter. The coalescing filter traps any fine liquid water particles, including aerosols and causes them to coalesce into larger droplets. These droplets fall to the bottom of the bowl and are blown out and carried to the compressor head, where they evaporate.

To replace the filter element, twist and remove the filter bowl from the cast housing. Unscrew the filter element from the cast filter housing and replace with a new filter. Do not attempt to clean the filter element. If it is necessary to clean the filter bowl, use a mild soap and water solution and rinse with water. Do not use solvents. Reassemble the unit by reversing the above procedure. Check for leaks by turning the unit ON and applying a dilute detergent and water solution at the bowl/housing seal and at the hose fittings which were reconnected. If no leaks are found, the unit is ready to return to service. If leaks are located, repair the leak and recheck for additional leaks. Leaking fittings must be repaired or the unit will not function properly and can result in damage to the transmission line system.

8.11 Replace Cooling Fan

The cooling fan ventilates the monitor enclosure thus cooling the compressor and the heat exchanger. Failure of a fan can result in saturation of the membrane dryer and damage to the compressor.

To remove a fan, disconnect the fan leads and remove the mounting hardware. Install the replacement fan using the existing hardware. Orientation of the ac power leads is not critical.

8.12 Replace Microprocessor Board

The microprocessor board assembly includes the display, the microprocessor, compressor pressure sensor, the processor containing the microprocessor programming, as well as other electronic components. A component failure on the microprocessor circuit card will necessitate replacement of the entire circuit board assembly.

To remove the microprocessor circuit board assembly, open the front door on the unit. Disconnect the wiring from the microprocessor circuit board being careful to note the location of each wire as it is removed. Remove the hardware which secures the board to the door panel, and remove the microprocessor circuit board. Install the replacement microprocessor circuit card assembly by reversing the above process.

Section 9
Specifications

Table 8 Specifications for Monitor XC100 Series	
Output Pressure Range Adjustable	0.3 to 15 Psi
Low Pressure Alarm	0.1 to 15.0 lb/in^2
High Pressure Alarm	0.1 to 15.0 lb/in^2
High Humidity Alarm Fixed	7.5% RH, factory set
Excess Run Alarm Set Range	Adjustable to 240 min.
Power Fail Alarm	Loss of input power
Alarm Contact Rating	Form "C" dry contacts, 2 amps @ 30Vdc
Input Power	115Vac/230Vac, 50/60Hz, 1 amps starting
Output Air Connector	3/8" poly tube compression fitting
Input Air Connector	3/8" poly tube compression fitting
Dimensions	height 3.5 in. (89 mm)
	width 17.0 in. (432 mm)
	depth 12.5 in. (318 mm)
Weight (net, nominal)	4 Pounds

Table 9 Specifications for Dehydrator XT300 Series	
Output Pressure Range Adjustable	0.3 to 15 Psi
Output Flow Rate (nominal)	0.3 SCFM (8.5 SLPM)
Output Dew Point	better than -50°F(-45°C) at 92 % RH at 104° F (+40° C)
Operating Temperature	+33 to +104 °F (+1° C to +40°C)
Input Power	230Vac, 50/60Hz, 0.03 Amps Standby Power (True) Watts 390 8 Amps Starting (115Vac) 4 Amps Starting (230Vac)
Output Air Connector	3/8" poly tube compression fitting
Input Air Connector	3/8" poly tube compression fitting
Dimensions	height 12.22 in. (310 mm)
	width 16.84 in. (428 mm)
	depth 10.25 in. (260 mm)
Weight (net, nominal)	46 Pounds
Over pressure limit internal	16 psi Pop off Valve

Table 10 Optional items:

System popoff valve 1/8 NPT 1 PSI	AE01J-0174-009
System popoff valve 1/8 NPT 2 PSI	AE01J-0174-001
System popoff valve 1/8 NPT 3 PSI	AE01J-0174-0011
Street Tee 1/8 NPT	3022

Section 10
Customer Support

10.1 24 Hour Technical Service Hotline

Andrew maintains a Technical Service Hotline for assistance with product repairs and service.

Andrew Corporation
10500 West 153rd Street
Orland Park, IL U.S.A. 60462
www.andrew.com

Telephone: 708/349-3300
FAX (U.S.A.): 1-800-349-5444

Customer Service, 24 hours:
North America: 1-800-255-1479
U.K.: 0800 250055
Europe, Africa & Middle East:
+44 1592 782 612

10.2 Free Loaner Program

Andrew maintains a repair center for pressurization equipment. Free loaner units are available for use while your equipment is being repaired by Andrew. Call our Technical Service Hotline for details.

Notes

Andrew Corporation
Dehydrator and Line Monitor System Three Year Warranty

Seller warrants that any Andrew MT050, MT/XT 300, 600 or 1700, MR050, MRS050, PMT200, ODPMT200 series number Dehydrator and any Line Monitor System is transferred rightfully and with good title; that it is free from any lawful security interest or other lien or encumbrance unknown to Buyer; and that for a period of thirty?six (36) months from the date of shipment or 3000 hours of actual run time, whichever shall occur first, such equipment will be free from defects in material and workmanship which arise under proper and normal use and service. Buyer's exclusive remedy hereunder is limited to Seller's correction (either at its plant or at such other place as may be agreed upon between Seller and Buyer) of any such defects by repair or replacement (with either a new unit or a factory reconditioned unit) at no cost to the Buyer; provided that the cost of any transportation in connection with the return of the equipment for the purpose of repair or replacement shall be borne by Buyer. The provisions of this warranty shall be applicable with respect to any equipment which Seller repairs or replaces pursuant to it. SELLER MAKES NO WARRANTY, EXPRESS OR IMPLIED, OTHER THAN AS SPECIFICALLY STATED ABOVE. EXPRESSLY EXCLUDED ARE ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR PURPOSE. THE FOREGOING SHALL CONSTITUTE ALL OF SELLER'S LIABILITY (EXCEPT AS TO PATENT INFRINGEMENT) WITH RESPECT TO THE EQUIPMENT. IN NO EVENT SHALL SELLER BE LIABLE FOR SPECIAL, CONSEQUENTIAL OR INCIDENTAL DAMAGES, INSTALLATION COSTS, LOST REVENUE OR PROFITS, OR ANY OTHER COSTS OF ANY NATURE AS A RESULT OF THE USE OF EQUIPMENT MANUFACTURED BY THE SELLER, WHETHER USED IN ACCORDANCE WITH INSTRUCTIONS OR NOT. UNDER NO CIRCUMSTANCES SHALL SELLER'S LIABILITY TO BUYER EXCEED THE ACTUAL SALES PRICE OF THE EQUIPMENT PROVIDED HEREUNDER. No representative is authorized to assume for Seller any other liability in connection with the equipment.